THE PLAN

Vision, Goals, Management Provisions and Prescriptions, Land Management Classifications and Management Areas and Objectives

DRAFT VISION STATEMENT

The Northern Highland-American Legion State Forest is a dynamic environment comprised of a variety of biological communities that contribute to the diversity of ecosystems in the region. The state forest provides a range of cultural, social, economic and ecological benefits, within its capabilities, for present and future generations. The unique, aesthetic character of the NH-AL State Forest and the quality of its waters are perpetuated and enhanced. The forest is managed in consultation with federal, tribal, local and other governments, and with other people who care about the forest, including those who live, work and recreate in and around it.

DRAFT PROPERTY GOALS

1. Provide a diversity of terrestrial and aquatic biological communities, including a range of forest types and age classes, with emphasis on communities that are special to the Northern Highland-American Legion State Forest.

2. Maintain and enhance aesthetic qualities of the Northern Highland-American Legion State Forest.

3. Identify and protect endangered and threatened resources, historic properties, and areas of geological, archaeological or cultural significance.

4. Provide a variety of renewable forest products consistent with forest capabilities.

5. In consultation with tribal governments, provide for the availability and enhancement of treaty resources.

6. Provide a variety of recreational settings and activities, ranging from primitive to developed, consistent with resource capabilities.

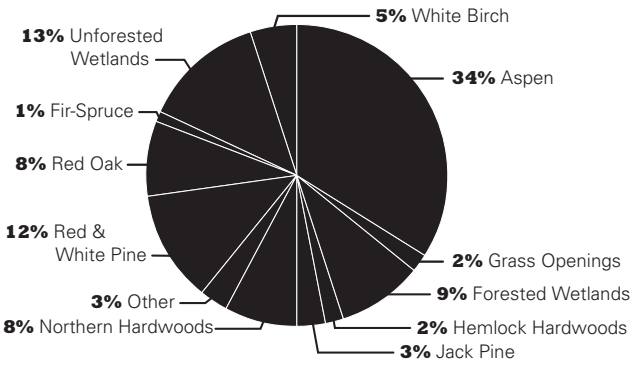
7. Provide a diversity of hunting, trapping, fishing and wildlife viewing opportunities.

8. Protect and enhance wild resource values such as solitude, remoteness, and the sights and sounds of a natural environment.

9. Resolve or minimize conflict among different types of recreational uses and among various types of forest uses and management activities.

10. Provide a variety of educational opportunities for state forest visitors.

Figure 2.1 Current Cover Types on the NH-AL State Forest



OVERVIEW OF THE FOREST

The forests of the NH-AL are part of a complex ecosystem, with a mix of forest communities that provide habitat for a diversity of plants and animals. Most of the uplands have dry, sandy soils that can support red and white pine, aspen, white birch, red oak, and jack pine forest communities. A few upland areas have richer loamy soils that support northern hardwood (sugar maple and yellow birch) or hemlock-hardwood forest communities. Most of the forest is young to middle-aged, while a few areas contain old trees and old growth characteristics. The many wetlands and lakes on the NH-AL help protect water quality and provide habitat for a variety of fish, birds, insects, and plants, including many rare species. About 75% of the NH-AL is uplands, 23 is wetlands, and 3% is unclassified.

The chart below shows the general plant community makeup on the NH-AL. For inventory purposes, forest compartments are classified by their dominant cover type. This means that forest stands listed as aspen have 50% or more of its basal area in aspen trees. Most forest stands contain a mix of tree species. For example, an "aspen" area probably also has red and white pine, red oak, and white birch mixed in. Therefore, two forest stands with the same dominant cover type may not have the same overall forest composition.

LAND AND FOREST MANAGEMENT

The Land/Forest Management Section of the plan describes the management for the forests, wetlands, and other resource components of the NH-AL, except for wildlife and fisheries, which are in their own separate sections.

This section of the plan is divided into the following primary sub-sections:

1. **General Land Management Provisions**
   A listing of forest-wide policies related to land management.

2. **General Management Prescriptions for Each Primary Forest Type**
   Describes the standard management approach and techniques that will be used for each primary forest type, unless otherwise prescribed in an individual management area plan.

3. **Individual Land Management Area Plans**
   The NH-AL is divided into 22 land management areas based on differences in resources, management potential, and management objectives. This section describes the specific management to occur in each area.

GENERAL FOREST MANAGEMENT PROVISIONS

BIG TREE SILVICULTURE

As a result of a Governor appointed committee, timber management policies were reviewed and it was recommended that on state forest lands the recreational and aesthetic values of old growth and big trees be recognized. Criteria included species of tree, habitat type, cutting cycle, risk and vigor, regeneration harvest and residual basal area levels. These criteria are outlined in the Silviculture and Forest Aesthetics Handbook- 2431.5. (Sloan 1986)

Big Tree Silviculture would continue to be used in the management of the NH-AL. Big Tree Silviculture maintains older white pine, red pine, northern hardwood, hemlock-hardwood, and red oak on high quality sites.

FOREST PEST CONTROL

As stated in Wisconsin Statutes 26.30, "It is the public policy of the state to control forest pests on or threatening forests of the state…" Within the Northern Highland-American Legion State Forest significant forest pest events will be evaluated with consideration of the property management goals and the potential threat of the pest to other landowners. Responses to significant infestations may include timber salvage or pesticide treatments. Any response to a significant pest outbreak will be evaluated by an interdisciplinary team of scientists and communicated through press releases and notices to interested parties.

HERBICIDE USE

Approved herbicides may be used for various purposes on the forest, such as the control of invasive plants or to control plant competition in forest regeneration areas, except as restricted in the management prescriptions in this master plan. Prior to treatment, local governments and tribes will be informed of the areas where herbicide will be applied. For the tribes the information will be provided to a designated tribal representative. Additional information will be provided upon request.

INVASIVE SPECIES CONTROL

Invasive nonnative aquatic and terrestrial plants have become recognized in recent years as a major threat to the integrity of natural areas, including the many lakes on the NH-AL. These species have the ability to invade natural systems and proliferate, often dominating a community to the detriment and sometimes the exclusion of native species. Invasive species can alter natural ecological processes by reducing the interactions of many species to the interaction of only a few species.

If detected on state lands, invasive exotic plants will be controlled using appropriate and effective methods, including but not limited to the use of herbicides, cutting, or hand removal. Control methods may be restricted in certain sensitive management areas. Before initiating control measures, refer to the management prescriptions for the area being treated.

BEST MANAGEMENT PRACTICES FOR WATER QUALITY

All management activities within the state forest would follow, as a minimum standard, the guidelines in the Wisconsin's Forestry's Best Management Practices for Water Quality

DIFFERENT TREES - DIFFERENT MANAGEMENT

Many different types of timber harvests and other vegetative management techniques are used, depending on individual site characteristics and the specific management objectives. For actively managed areas, the type of harvest used on any site is primarily determined by the requirements of the type of trees that are desired in the stand after the harvest. For example, aspen, white birch, jack pine need sunlight and open space to regenerate. So, clearcutting would be commonly used to regenerate them. On the other hand, northern hardwoods can grow in more shade and can not readily compete with more sun-loving trees. Selective harvesting is used on northern hardwoods to retain more of a tree canopy. Red oak stands are typically harvested in stages, leaving some older trees to drop acorns which sprout into young oak trees. In some cases ground disturbance, such as mechanical scarification, is needed to expose bare soil to encourage regeneration of species like jack pine and white birch. Prescribed burning may be used to manage some forest and barrens communities. Some species such as red pine and jack pine often are planted. On some site, particularly hemlock stands, passive management (no action) is the best tool.

(BMPs). A Field Manual for Loggers, Landowners and Land Managers, DNR publication PUB-FR-093-95.

ENDANGERED, THREATENED AND SPECIES OF SPECIAL CONCERN PROTECTION

Thirteen State or Federally Threatened Species, one State Endangered Species and seventy-nine Species of Special Concern Species were identified through inventories on NH-AL by the Endangered Resources program. All management prescriptions in the proposed master plan have considered the needs of these species and the potential impacts to the species and their habitat. Annual management actions being planned on the state forest are checked against an up-to-date database of listed species to assure that no department actions results in the direct taking of any known endangered or threatened resource. Please refer to the appendix for a listing of the endangered, threatened and species of special concern.

MANAGEMENT OF SMALL, SCATTERED OLDER STANDS OF RED AND WHITE PINE

Manage the small, scattered red and white pine stands with a year of origin of 1910 or earlier for old growth characteristics using active and passive techniques. (Old growth characteristics will begin to develop at age 150 to 180 years as some of the large trees begin to die and become snags and coarse woody debris.)

Unless active management is restricted, if appropriate lightly thin the stands to remove small and crowded trees to allow the age and structure of the remaining trees to increase. Entry into these stands should be at longer intervals than typical for areas managed under Big-Tree Silviculture. Regenerate these stands after they have establish old growth characteristics and before the age when establishing regeneration would be a problem. In areas or zones designated as passive management only allow the stands to naturally regenerate. Passive management may be used in actively managed areas as deemed appropriate, particularly along shorelines, on small swamp islands, or for pine stands that are 150 or more years old.

GENERAL FOREST MANAGEMENT PRESCRIPTIONS, *BY PRIMARY FOREST TYPE*

For each forest-type there is a specific set of management techniques that favor the maintenance and regeneration of that type. The following describes the general management prescriptions to be used for each primary forest type on the NH-AL. Each prescription will be applied wherever management for that specific forest type is an objective, as stated in the individual management area plans later in this chapter. The individual management area plans may modify or limit these general prescriptions to fit the area.

ASPEN DOMINATED MIXED FOREST

This forest type is an early successional forest that requires disturbance and abundant sunlight to regenerate. It typically will be managed with clearcuts and modified clear-cut harvests of various shapes and sizes occurring at intervals of 45-60 years to maintain this forest type.

General Management Prescriptions

Depending on whether the stand is pure aspen or a mixed aspen community, different management activities will be used to move the forest toward the future desired state.

- When planning individual management actions, consider the ecological values through a landscape view of aspen's role on the NH-AL. A variety of age classes and stand sizes across the landscape provide value to wildlife and aesthetics. Some considerations in landscape planning include the age classes and patch sizes across the landscape, the natural disturbance regime in the area, the surrounding cover types and management.
- Harvest and regenerate aspen naturally, primarily through clearcutting. In stands where the objective is to develop or maintain mixed species the primary management strategy to use "coppice with standards", which means to harvest aspen trees but retain individual red oak, red pine, and white pine trees within a stand. This allows the remaining oak and pine trees to provide seed to the area thus increasing the diversity of the stand.
- Harvest aspen, white birch, red maple and other short-lived species in the stand, leave red oak, red pine, white pine and individual trees of high value to wildlife, forest diversity and aesthetics.
- Research alternative regeneration techniques for the aspen cover type. Specifically, determine if selective harvest or disturbance may reduce aspen root-sprouting and encourage growth of remaining trees, and if such techniques will help convert some aspen stands to other desired species.
- In aspen stands along lake and stream borders, road aesthetic strips, or as islands in wetlands, as appropriate, modify the standard management practices or apply no management to meet the management objectives for these areas.

RED AND WHITE PINE DOMINATED MIXED FOREST

This forest type occurs in wide range of current conditions that require a range of management intensities and a variety of techniques. Some soil disturbance is required for successful regeneration of these pine species.

General Management Prescriptions

Depending on the origin and composition of the red and white pines, several management activities will be used to manage pine forests toward future desired condition of increased pine composition and mixed species stands.

- Where red and white pine are of natural origin and the primary cover type, use selective harvests maintain the health, vigor and growth of the pines. Remove selected individuals or small groups to maintain species diversity and structural diversity. At biological maturity (140-250 years red pine, 150- 350 years white pine) harvest pine and replant or naturally regenerate. Clearcutting, seed tree harvest and overstory release may be used depending on site conditions. Stand considerations, seed sources, and site prep needs will determine the appropriate management action to use.
- Plant red and white pine plantations as needed to maintain pine on sites or to convert other forest types to pine. Hand or machine plant of nursery stock seedlings following site preparation by mechanical and herbicide application. Use hand or herbicide release following planting to maintain growth and vigor of planted pine trees and increase survival of planted trees.
- Thin pine plantations (red, white, possibly jack) on a recurring basis (8-20 year intervals), according to prescriptions outlined in the DNR Silviculture and Forest Aesthetics Handbook, to gradually create a structure similar to that of a naturally appearing pine stand.
- Mixed pine stands containing a large percentage of tree species other than pine may be treated with selection harvest, shelterwood harvest or overstory removal of other species to promote pine to dominate the future stand or increase the numbers of pine in natural regeneration after harvest. Several harvest entries may be required to bring pine to a dominant position.
- Where red and white pine is a viable understory component, use natural regeneration techniques. Plant pine if

natural regeneration fails or is not possible.
- Leave scattered large red and white pine in many harvest areas if they are healthy and do not pose a risk to humans or forest health (Big Tree Silviculture).
- Ground disturbance or prescribed fire may be used to promote regeneration of red or white pine where feasible and safe.

RED OAK DOMINATED MIXED FOREST

Oak forests historically developed or regenerated following a significant disturbance even such as fire or blow-down and fire. Much of the current red oak developed following the large scale cutover and wildfire era in the early 1900's. Red oak may be encouraged on sites with appropriate soil, slope and other conditions. This forest type has high value to a wide number of game and non-game wildlife species. Disturbance is required to regenerate existing stands and to maintain an oak component in mixed stands.

General Management Prescriptions

- Use thinnings to develop oak stands as they near biological maturity, and use shelterwood and selective cuts, to regenerate this species. Regenerate red oak at 90-150 years of age, depending on site characteristics. Other management techniques that may be applied when needed to red oak stands include single tree selection, clear-cuts with reserves, scarification, hand-release and herbicide treatments to promote regeneration. A diverse stand is a good goal of regeneration. (Oak is typically harvested through the shelterwood method. In a shelterwood harvest, about 30-40% of the mature trees are harvested, depending on site characteristics, to allow for sunlight and the regeneration of young oak trees. After the young oak trees have regenerated, about 10 to15 years later, the majority of the mature trees are harvested, while maintaining 5 to 10 old trees for age and structural diversity and wildlife).
- On mixed stands of red oak with white pine, northern hardwoods or other species manage to promote components of older long-lived trees and natural regeneration of these species and other secondary species.
- On nutrient poor, droughty soils with scrub oak stands, use clearcutting to regenerate a component of oak along with aspen/white birch/jack pine. (Some individual management area prescriptions call for converting such sites to jack pine.)

JACK PINE DOMINATED FOREST

This is an early successional forest type that requires disturbance and full sunlight conditions to regenerate. Historically, jack pine stands regenerated following fire or insect infestation/fire events. Harvest and ground disturbance not only provides for good regeneration of jack pine but also supports the development of a diverse mix of grasses, forbs and shrubs, which are important during successional stages of this forest community.

General Management Prescriptions

- On dry sites, clear-cut jack pine at biological maturity (50-80 years) and use appropriate means to regenerate the stand. Clear-cutting and planting, mechanical scarification or fire may be used. Currently planting is the most effective method for maximum survival of Jack Pine because of the quality of the seedlings and an initial advantage over the competing vegetation. Establish Jack Pine plantations as necessary to maintain pine on sites or to convert other forest types to Jack pine. Prepare the site using mechanical and herbicide treatment, then follow-up with hand or machine planting of nursery stock seedlings. Use hand or herbicide release following planting to maintain seeding growth, vigor, and to increase the survival rate.
- On mixed stands of jack pine, aspen and white birch, clear-cut harvest to regenerate a mixed stand or planted to jack pine.

WHITE BIRCH FOREST

White birch was one of the top 3 species present on the NH-AL prior to European settlement and was another early successional forest type that came in strongly following the fires of early 1900's. White birch requires mineral soil for a proper seedbed to germinate seed, and it is a highly drought sensitive species. Many of the white birch stands are mature and declining. To maintain this forest community in the landscape, harvest followed by active management is the most effective method. Harvest and ground disturbance provides for good regeneration of white birch as well as development of a diverse mix of grasses, forbs and shrubs important during successional stages of this forest community.

General Management Prescriptions

- Regenerate white birch by clearcutting stands, strip cutting, shelterwood harvest or by modified clear-cuts that open up stands. Typically use ground disturbance

during harvest, mechanical scarification, or prescribed fire to prepare the forest floor for white birch seed germination.
- On mixed stands of white birch and other species use selection harvest, shelterwood harvest, and clear-cut harvest, as appropriate, for diverse natural regeneration. Harvest mature white birch in areas where another forest type is the primary objective.
- Where white birch is an associate in aspen stands, clear-cut harvest the birch along with aspen. (White birch can stump sprout from healthy cut trees and can seed in on soils that are exposed by mechanical methods along with the aspen regeneration.)

NORTHERN HARDWOODS FOREST

This forest type is managed as an all-aged forest stand. Most of the hardwoods will be managed to diversify tree ages, sizes and types of tree species in each stand as specified in the individual the management area plans.

General Management Prescriptions
- Use selection harvest as the primary management tool, and vary harvest intensity according to site specific conditions and needs. Plan harvests to maintain or increase species diversity in these stands.
- Depending on the objectives of a particular management area, more intensive silviculture systems such as shelterwood harvest, group selection, gap creation may be used on some sites. These techniques may be applied to an entire stand or to parts of a stand in conjunction with a selection harvest.
- Manage mixed Pine-red oak-aspen-northern hardwood stands through a wide variety of active techniques, depending on site conditions and the management objectives for the area.
- Where northern hardwoods are to be maintained, generally schedule management entries at intervals of every 15-20 years. To develop a northern hardwood stand with many age classes, evaluate the regeneration, spacing, density and other stands conditions. Harvests can take place at every interval but will be less intense than at the initial entry.

HEMLOCK - HARDWOOD FOREST

This forest community is represented by generally small, mostly older stands scattered throughout the NH-AL. Overall, these areas would be maintained as they exist and regeneration will be encouraged where appropriate. Most hemlock stands would not be actively managed but some may see selective harvest of other species in the stand to enhance existing hemlock and promote hemlock regeneration.

General Management Prescriptions
Because of the low acreage and scattered presence of the hemlock-hardwood forest, very little will be done to manage this community.

- Use passive management as the dominant management system on these stands. Where needed, selectively harvest competing species to remove them from mixed hemlock-hardwood stands. Retain hemlock in northern hardwood and other stands to promote diversity and maintain seed sources for potential natural regeneration.
- On a periodic cycle, monitor hemlock-hardwood stands for growth, regeneration and the presence of invasive plants.

FORESTED AND UNFORESTED WETLANDS

The forested wetland areas typically contain stands of swamp conifer (black spruce, tamarack, white cedar and associated tree species). They can be pure stands of individual species or combinations of two or more tree species. Also included in this category are swamp hardwood stands. Examples of these are black ash, red maple and other species that occupy a wet forest environment. The unforested wetlands are represented by large areas of sphagnum keg and open bogs as well as alder thickets and marshes.

General Management Prescriptions
- No management activities will be conducted within wetlands with small sized slow growing trees, lowland brush, or areas of open bog and marsh. (Note: these vegetation types make up most of the wetland acreage.) However, access across these stands on a frozen ground temporary road may be required.
- Productive stands of swamp hardwood, primarily black ash, may be regenerated by limited harvesting (create partial openings or use shelterwood cuts) following the guidelines in the DNR Silvicultural and Forest Aesthetics Handbook.
- Productive stands of tamarack and black spruce may be regenerated by limited harvesting of stands (clear-cut) following the guidelines in the DNR Silvicultural and Forest Aesthetics Handbook and in consultation with an integrated team of scientists.
- Conduct timber harvests on forested wetlands only under frozen ground conditions to prevent rutting and potential damage to organic soils.
- Retain all white cedar.